

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A resonator apparatus, for use in filters for an electrical signal, comprising:
 - a. a first resonator device [[,]] having a first end and a second end, wherein the first end defines a first segment aligned along a first axis and the second end defines a second segment aligned along a second axis, the first axis being non-collinear with the second axis;
 - b. a second resonator device; and
 - c. wherein the first end and the second end are arranged and configured to lie on the same side of the first resonator and proximate the second resonator, and wherein a first distance of the first end from the second resonator creates a primary coupling between the first and second resonators, and a second distance and a length of the second end creates a secondary coupling between the first and second resonators, wherein the first distance and the second distance do not equal one another, the second end is not physically connected to the second resonator, and the overall distance of the first and second resonators from one another is optimized by independently controlling the primary or secondary coupling.
2. (Original) The resonator apparatus of claim 1, wherein the first and second resonator devices are constructed in an HTS microstrip configuration.
3. (Currently Amended) A resonator apparatus, for use in filters for an electrical signal, comprising:
 - a. a first resonator device [[,]] having a first end and a second end, wherein the first end includes a first segment aligned along a first axis and the second end includes a second segment aligned along a second axis, the first axis aligned generally parallel to and non-collinear with the second axis;
 - b. a second resonator device, the second resonator not being physically connected to the second end; and
 - c. wherein the first end and the second end are arranged and configured to lie on the same side of the first resonator and proximate the second resonator, and wherein a first distance of the first end from the second resonator creates a primary coupling between the first and second resonators, and a second distance and a length of the second end creates a secondary

coupling between the first and second resonators, whereby the overall distance of the first and second resonators from one another is optimized by independently controlling the primary or secondary coupling, wherein the first end is arranged and configured to provide a substantially larger interface to the second resonator than the second end.

4. (Previously Presented) A resonator apparatus, for use in filters for an electrical signal, comprising:

- a. a first resonator device, having a first end and a second end;
- b. a second resonator device;
- c. a coupling strip which couples the second end to the second resonator, the second end being physically unconnected from the coupling strip; and
- d. wherein the first end and the second end are arranged and configured to lie on the same side of the first resonator and proximate the second resonator, and wherein a first distance $S1$ of the first end from the second resonator creates a primary coupling $F1$ between the first and second resonators, and a second distance and a length of the second end creates a secondary coupling $F2$ between the first and second resonators, whereby the overall distance of the first and second resonators from one another is optimized by independently controlling the primary or secondary coupling.

5. (Previously Presented) The resonator apparatus of claim 4, wherein the primary coupling $F1$ is a function of the first distance $S1$ between the first and second resonators, and the secondary coupling $F2$ is a function of $S2a$, $S2b$, $L2a$ and $L2b$ where $S2a$ is the distance between the coupling strip and the first resonator and $L2a$ is the length of the coupling strip which lies adjacent the first resonator, $S2b$ is the distance between the coupling strip and the second resonator and $L2b$ is the length of the coupling strip which lies adjacent the second resonator, wherein the total coupling between the first resonator and the second resonator, F , is defined by:

$$F = F1(S1) + F2(S2a, S2b, L2a, L2b).$$

6. (Original) The resonator apparatus of claim 1, wherein the primary coupling can be either capacitive or inductive and the secondary coupling can be either capacitive or inductive.

7. (Original) The resonator apparatus of claim 1, wherein the primary coupling can be either capacitive or inductive.

8. (Original) The resonator apparatus of claim 1, wherein the secondary coupling can be either capacitive or inductive.
9. (Original) The resonator apparatus of claim 1, further comprising at least one non-adjacent resonator device and a coupling strip between the first resonator and the at least one non-adjacent resonator device.
10. (Previously Presented) The resonator apparatus of claim 2, wherein the micro-strip configuration includes a dielectric substrate of either MgO, LaAlO₃, Al₂O₃, or YSZ.
11. (Currently Amended) A filter for electrical signals, comprising:
- a. a plurality of resonators, at least one resonator having a first end and a second end connected by a conducting material therebetween, the second end being arranged to overlap at least a portion of the conducting material; and
 - b. the first end and the second end being arranged and configured to lie on the same side of the at least one first resonator and proximate a second resonator, and wherein a first distance of the first end from the second resonator creates a primary coupling between the at least one first resonator and the second resonator, and a second distance and a length of the second end creates a secondary coupling between the at least one first resonator and the second resonator, wherein the first distance and the second distance do not equal one another, the second end is unconnected from the second resonator, and the overall distance of the at least first resonator and the second resonator from one another is optimized by independently controlling the primary or secondary coupling.
12. (Previously Presented) A filter for electrical signals, comprising:
- a. a first resonator device;
 - b. a second resonator device;
 - c. a coupling strip overlapping with the first and second resonators, wherein the second end is not physically connected to the coupling strip; and
 - d. the first resonator device and the second resonator device having a primary coupling and a secondary coupling between the first and second resonators, wherein the overall distance of the first and second resonators from one another establishes the primary coupling and the distance between the coupling strip and the overlap with the first and second resonators establishes the secondary coupling, whereby the distances between adjacent resonators is optimized by controlling either the primary or secondary coupling.

13. (Previously Presented) A method of controlling coupling in an electric signal filter, having a first and second resonator and a coupling strip, comprising the steps of:
- determining a primary coupling $F1$ between the first and second resonators based on the desired distance between the first and second resonators;
 - determining a desired secondary coupling $F2$ in order to arrive at the total desired coupling between the first and second resonators; and
 - determining the distances and lengths of the coupling strip from the first and second resonators to achieve the determined secondary coupling $F2$, where $F2$ is a function of $S2a$, $S2b$, $L2a$ and $L2b$, and $S2a$ is defined as the distance between the coupling strip and the first resonator, $L2a$ is the length of the coupling strip which lies adjacent the first resonator, $S2b$ is the distance between the coupling strip and the second resonator, and $L2b$ is the length of the coupling strip which lies adjacent the second resonator, the primary coupling $F1$, wherein the total coupling between the first resonator and the second resonator, F , is defined by:

$$F = F1(S1) + F2(S2a, S2b, L2a, L2b).$$

14. (Original) The method of claim 13, further comprising the step of locating at least one non-adjacent resonator device and a coupling strip between the first resonator and the at least one non-adjacent resonator device.
15. (Previously Presented) The resonator apparatus of claim 1, wherein the first and second resonator devices are located in a common plane and further comprising a coupling strip which couples the second end to the second resonator, the coupling strip being located in the plane.
16. (Previously Presented) The resonator apparatus of claim 4, wherein the primary coupling can be either capacitive or inductive and the secondary coupling can be either capacitive or inductive.
17. (Previously Presented) The resonator apparatus of claim 4, wherein the primary coupling can be either capacitive or inductive.
18. (Previously Presented) The resonator apparatus of claim 4, wherein the secondary coupling can be either capacitive or inductive.

19. (Previously Presented) The resonator apparatus of claim 4, further comprising at least one non-adjacent resonator device and a coupling strip between the first resonator and the at least one non-adjacent resonator device.

20. (Previously Presented) The resonator apparatus of claim 4, wherein the first and second resonator and the coupling strip are all located on a common planar surface of a circuit substrate.